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WITH UNCLE SAM'S NATURALISTS. Friday, Sept. 27, 1929.

NOT FOR PUBLICATION

ANNOUNCEMENT: Every two weeks at this time our Wilds Man tells us about his visits with Uncle Sam's Naturalists and what they have to say about the wild life in the Big Outdoors. Naturally, at this time, when hunters are cleaning and oiling up their guns for the fall hunting, our Wilds Man has been talking to the specialists in the United States Biological Survey about game and the game laws. Now he is going to tell us what he found out.

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Of course, we all know we need game laws. As for me, I've always thought of game laws as necessary to keep the pot hunters from ruing the hunting. I've though of game laws merely in terms of bag limits and open and closed seasons. But since I talked with Mr. Frank L. Earnshaw, of the Division of Game and Bird Conservation of the U. S. Biological Survey, I've come to see there is more to our game laws than I thought.

For instance, we have laws not only to protect our birds from over-zealous gun-men; but we have laws to protect our birds from other birds. You all remember how the English sparrows multiplied and spread and made things miserable for some of our native birds. And you also know how the Starlings have been spreading. But so far as it is known, since the Lacey Act of 1900, which governs the importation of foreign wild animals and birds, no injurious foreign species of bird or mammal has gained a foot-hold in this country. An undesirable foreign bird literally hasn't a "Chinaman's chance" to get into the United States, now.

However, as you know, some of our most desirable birds seem a bit hazy in their ideas of political boundaries--even though they undeniably have a remarkable sense of direction. Many of the wild ducks and geese coming over our way here in the fall have their summer homes in Canada.

It is plain in the case of such migratory birds that the more that are killed in Canada the fewer there will be for our hunters to shoot at. And the more we bring down on this side of the line, the fewer there will be to get back to Canada to keep up the supply.

For that reason, Great Britain and the United States entered into a treaty restricting the open seasons on game birds that imigrate between this country and Canada to not more than three and a half months in any one year. Under the treaty legislation spring shooting has been abolished, the sale of migratory birds prohibited, and the number of birds that can be taken in any day has been limited. So you see, our game laws in effect protect the migratory birds, which we generally think of as "our" birds, far beyond our borders.

But protection from hunters is just one phase of game protection. In time past, we have taken the attitude that wild life can shift for itself;--that Nature will look after its own. But who has been looking out after Nature?

You have all heard the stories of the older folks about how plentiful certain birds and other game used to be. And even allowing for the tendency of some folks to stretch a good story, the difference in the supply then and now is remarkable.

That is, it is remarkable, until you begin to think how we have been crowding out the wild spots with our cities and farms. In fact, we have often drained marshes for farm land, when we had better left them as they were.

As a result, we have used up many of the breeding and feeding and resting grounds of our wild ducks and other game birds. For that reason, the State and Federal Governments have passed laws setting aside game refuges.

As you know, from your own dealing with them, birds and other game, seem to find out soon where they are safe. They quickly avail themselves of the protection offered by these government reservations.

The United States Biological Survey now has 83 game and bird reservations under its control. Many of them are along our southern Atlantic and Gulf Coasts, Mr. Earnshaw tells me. In fact, the President has recently added another bird refuge off the west coast of Florida. Some islands in the group known as Cedar Keys have been set aside as a nesting and wintering ground for several species of aquatic birds. It is now unlawful to hunt or trap any wild animal or bird on the islands of that refuge.

But more important from the sportman's standpoint is that migratory-bird refuge at Bear River Bay, on Great Salt Lake, in Utah, authorized by Congress.

The site of that refuge is the greatest wild-fowl area in the Rocky Mountain region. Every year thousands of ducks and geese and other migratory birds stop there but many are lost from alkali poisoning. Construction work is underway to supply fresh water to the broad marginal flats of the area for the correction of this adverse condition. The Bear River refuge is a great game reservoir for eleven Western States and the development of more favorable conditions for the birds at that point will be of great benefit to the whole region.

And there you have one of the most important ideas about these game refuges; especially those for migratory birds, like wild ducks and geese. The refuges serve as sources of supply of game for hunters over a wide stretch of country.

Bird routes from many directions converge at such favorable feeding grounds. The birds of passage that furnish the game for hunters in distant States may depend upon such refuges for the preservation of their species.

Another of the most important of our new game refuges is the Upper Mississippi River Wild Life and Fish Refuge, which extends for 300 miles along the Mississippi River between Rock Island, Illinois, and Wabash, Minnesota.

Sportmen all over the country are coming to realize more and more the need for such refuges along the lines of flight of our migratory birds. The main idea is not to create a hunterless heaven for the birds but to conserve the great wild life resources of this country so as to provide resources of game for the enjoyment of the people throughout the country.

The game laws aim to protect our native desirable game birds by preserving to them the kind of country they need to live and multiply, by defending them against the unsportsmanlike "sportsman," and by guarding them against foreign birds or mammals that might prove dangerous to them.

In order to do your part, you hunters need to know the regulations as to open seasons and bag limits, and other State and Federal laws aimed to make the best hunting for the most people.

The United States Department of Agriculture in its Farmer's Bulletin No. 1616 gives a summary of the Game Laws for the Season. You can get a copy free of charge by writing to the United States Department of Agriculture at Washington, D. C.

CLOSING ANNOUNCEMENT: Well thank you Mr. Wilds Man. He'll be back with you two weeks from today with another one of the stories of Uncle Sam and outdoors living. Meanwhile, friends, the United States Department of Agriculture, whose representative Mr. Wilds Man is, will be glad to send Farmers' Bulletin 1616 giving a summary of the game laws for the present season. Address your requests to Station____or to the United States Department of Agriculture, Washington, D. C.

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WITH UNCLE SAM'S NATURALISTS Friday, October 11, 1929

Speaking Time: 10 Minutes

ANNOUNCEMENT: Every other week at this time our Wilds Man tells us about his visits with Uncle Sam's naturalists. This week, however, he went to the Forest Service to see just what the Forest Service does to protect our forests from fire, and how it does it. ---- Well ----

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If there is anything likely to make a lover of the wilds wild, it is a forest fire. I guess you have all been reading about these big fires we've been having. A month ago, it had already cost the government way over two million dollars to fight the fires in our western forests. The fires had already burned over 650,000 acres of timber land. A lot more has been burned since, and now we are in the fire season in the Eastern forests.

Why just in one district in northern Idaho and northern Montana, there were 2700 men fighting forest fires at one time. At the same time, there were hundreds of others fighting fires in other districts. This thing of fighting a forest fire is a man-size job.

During dry weather, when the litter on the floor of the forest gets dry, it is mighty easy to start a fire---- and mighty hard to keep it under control. In the West, when there is drought and high winds, the forest may soon get to be a hell-roaring furnace. Burning brands and sparks flying through the air from the original fire may start new fires in a half dozen other places. Sometimes, the fire-fighters themselves are trapped between fires.

In the East the fires are usually not so spectacular, but they do a tremendous amount of damage just the same. The fires are generally ground fires which feed on the dead leaves and burn through the young trees, or scar the older ones so that rots and insects can get in to finish the work.

But the loss is not as big as it might be. About 70 per cent of our forests now have organized protection against forest fires, Mr. C. E. Randall, the information man of the U. S. Forest Service, tells me. Of course, they have fires where there is organized protection. But the damage done by forest fires on the protected area is less than one-eighth the damage done on the 30 per cent yet to be protected. That shows it pays to protect.

The first thing in protection is to have an organized system of detecting the fires. For that reason, on the National Forests the Forest Service has lookout stations located on high ground to spot fires. The idea is to locate the fire as soon as possible after it starts, and get men to it to put it out before it does much damage.

For that, telephone and other communication lines are needed, so the lookout can report and the ranger or warden get word to rush the fire fighters to the scene of danger.

In order that the fire fighters be prepared to handle the situation, the necessary tools and supplies must be located at strategic points throughout the forest. And, of course, there must be an adequate system of roads and trails through the forest so the fire fighters can reach the fire readily.

At the present time, the Forest Service is experimenting with portable radio sets, light enough and strong enough to be carried by fire crews in inaccessible regions in order to keep in touch with headquarters and lookouts. Tests are also being made on radio transmission over rugged mountain country such as is found in most of our national forests. Such tests are necessary to determine how reliable radio communication between the crews in the forest and ranger headquarters can be made.

Airplanes have been used for some time in our western forests. Commercial companies are under contract to supply pilots and planes when needed. During the fire season, emergency patrols are frequently maintained, and the airplanes are used not only in reconnoitering to locate fires, especially after big electrical storms, but to determine the direction and rate of travel of the fire and even to carry men and supplies to the fires, in special cases.

You see, many of our forest fires in the West are caused by lightning. Sometimes, one electrical storm will start three or four hundred separate fires in the forest.

Most forest fires, however, are caused by human carelessness; a burning match, a smouldering cigarette, or a spark from a camp fire not properly put out, may start a fire in the dry leaves and brush. In fact, some of the National Forests are closed to smoking during bad fire seasons.

Naturally a lot depends on the weather. For that reason, the Weather Bureau and the Forest Service experts are working together in New England and in the Northwest to find out just what the weather conditions are which make up "fire-weather."

By those studies, they hope to be able to accurately predict when it is necessary to keep closer watch on the forest, and to forecast how fast the fire will spread if it starts. With such information, the forest ranger will be able to estimate how many men he will need on the fire lines.

The fire lines are usually clear strips through the forests which serve as fire breaks and points from which back-fires may be started to check the main fire. In the East, where the land is not so rugged, fire lines are often made by plowing and clearing. In the West, where the land is more rugged, the brush and trees are cut out to make a fire line.

Standing dead trees, or "snags", are one of the worst fire hazards of the forest. They not only catch readily, but form a pillar of fire from which flaming brands may be hurled by the wind and start new fires past the fire lines. When such trees are rotted and hollow, they are vertible chimneys for sparks. So another job in fire protection is to cut down such standing dead trees, so they will rot more quickly and be less of a menace to the sound timber.

In the southern forests, the old custom of woods burning still persists with many people. Farmers under the notion that burning the forest cover in the spring will improve grazing and kill cattle ticks frequently set fire to the woods.

Such woods burning is of no value in keeping down the ticks, and a poor way to improve grazing. While the grazing season in the woods may be advanced a little, the repeated burning kills out the best forage grasses and the less valuable weeds are left. And often, such fires kill off timber of many times the value of the woods for pasture.

So the U. S. Forest Service has not only to maintain an elaborate system of lookouts, and often recruit a small army of fire-fighters, and manage the forests so as to decrease the danger of fire, but it has to educate the hunter, and the camper, and the tourist, and the woods-burner.

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<u>ANNOUNCEMENT</u>: Our Wilds Man will be back in two weeks to tell us more about the visits he makes with the naturalists of Uncle Sam, in the United States Department of Agriculture.

UNITED STATES DEPARTMENT OF AGRICULTURE Radio Service OFFICE OF INFORMATION

WITH UNCLE SAM'S NATURALISTS. Friday, October 25, 1929.

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Speaking Time: 10 Minutes

Rat Control.

ANNOUNCEMENT: Every other Friday our Wilds Man gives us a few nature facts which he gathers from Uncle Sam's naturalists. Today he promises to tell us about his visit with Mr. James Silver, of the United States Biological Survey ------ What did they talk about ------ Aw, rats! ---- I'll let him tell you about that -------

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Yes, rats it is. Most of us don't think of rats, especially the common brown or house rats, as part of nature. We generally think of them in connection with houses. They are a sort of undomesticated domestic animal. They seem to prefer to make our homes, and our barns, and our stables their homes.

There is a reason for that. We treat rats better than their enemies in the open treat them. Hawks and owls, and other such birds of prey often make short work of rats.

And no wonder they take shelter in our buildings! As a rule, they are much safer in our places than in the wild. The cats we keep don't give us much protection. Cats of real value as ratters are rare.

Yes, a lot of folks furnish food and shelter for rats. And the more food available, the more rats. Well-fed rats mature quickly, and breed often, anf have big litters. Poorly fed rats, breed less often and have smaller litters.

In this part of the world, rats usually average about ten to the litter. Normally, rats breed six to ten times a year, and start breeding when only three or four months old. Figure it out for yourself. A friend of mine did. He found that at that rate one pair of rats, all breeding uninterruptedly and without losses, would increase in three years to nearly 260,000,000.

I was telling another fellow about that, and he said: "Yes, that must be the pair of rats that started a family on my place three years ago."

He was complaining that rats had caused him big losses in chicks and

eggs! Of course, that kind of damage is easy to see. Much more so than the slow, steady drain of grain and other farm products.

Mr. James Silver, of the Division of Predatory Animal and Rodent Control of the Biological Survey, tells me that rats every year do $7,000,000 worth of damage to corn in storage alone. Rats are expert climbers too, and often damage standing corn in the fields.

Rats feed on all kinds of animal and vegetable matter. They attack crops when they are just planted, while growing, during the harvest; in storage, and during transit, and in the mill, and in the store, and in the home. And they ruin by pollution many times as much as they eat.

Figuring that there are only as many rats in this country as there are people, and that each rat destroys $2 worth of property a year, Mr. Silver estimated that rats are doing a damage of more than $200,000,000 a year in this country alone.

"Pity, the Pied Piper of Hamelin couldn't have broadcast that music by radio," I remarked.

"I'd rather trust to Red Squill than the Pied Pioer," he suggested.

"Red squill is deadly to rats, when they eat it, and they eat it freely. Domesticated animals and human beings don't like it, but even when they do get an overdose of it, it doesn't do them much harm. For that reason, powdered red squill is especially good to use to poison rats about poultry plants, and barns, and other farm buildings, where there is danger of farm animals gaining access to the baits.

Then, too, one of the surest ways of killing rats in their burrows in the ground, and under tight floors, is by forcing calcium-cyanide dust into the burrows by means of a dust pump. The dust forms a very deadly gas on exposure to the air. Unlike red squill, it isn't deadly to rats only. It is fatal to man and other animals even in very small quantities and so should only be used in the open air.

Rats can also be killed in their burrows by the exhaust of an automobile. By attaching a garden hose to the exhaust pipe, and letting the auto engine run at moderate speed for ten minutes or more while directing the hose into the burrow, you can do an effective job of gassing.

However, you will find the different ways of getting rid of rats in Farmers' Bulletin No. 1533-F on "Rat Control." That bulletin tells not only how to kill rats, but how to keep them out. Mr. Silver wrote that bulletin himself and gives more details there than we could get into a short talk.

Buildings have to be built right to keep out rats. Every new building should be rat-proof, whether in the town or country. And much can be done to protect even old buildings in cities against rats.

Rats need food and shelter. Where they can't get food and shelter, they can't live long.

Mr. Silver says that rat-proofing clauses in local building ordinances and more strict regulations in local sanitary codes, including the proper collection and disposal of garbage and the prevention of trash and waste accumulations on private premises, will do more to bring about permanent reduction in the number of rats than any other measure.

Now, we have been very nice in speaking about the rat. But the rat is not nice. Our common brown rat is a filthy, disease-carrying beast. For hundreds of years, man has been living with rats and at the same time fighting them. The terrible "black death" of the Middle Ages is now believed to have been the bubonic plague spread from country to country and city to city by our common brown rat. Twenty-five million persons are estimated to have died in Europe during that epidemic. Recently, rats on ships brought that plague into this country, but prompt rat-killing work by the United States Public Health Service stamped out the disease at the port.

Rats are highly migratory. They move from house to house, from farm to farm, and from community, and from State to State, and country to country. You should do everything you can to protect your life and property from these filthy disease-spreading robbers. Prevent trash accumulating. See that the garbage pail has a tight-fitting top. Rat-proof your buildings. Trap them out, gas them out, or poison them out.

Even when you kill off all those on your own premises, more may come in from the neighbors. For permanent results, the whole community should cooperate. County-wide anti-rat campaigns are very valuable, because they clear many farms of the pest at the same time, so they won't immediately become reinfested from adjoining premises. Some cities now carry on anti-rat campaigns as a regular thing each year.

During the cold winter months, rats concentrate around the farm buildings. So right now is the time to send for that bulletin and lay your plans for an effective anti-rat campaign.

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ANNOUNCEMENT: The bulletin on "Rat Control" is Farmers' Bulletin No. 1533-F. It contains suggestions for rat-proofing buildings, for gassing and poisoning, and for rat trapping. You can get a copy free of charge by writing either to Station__________ or to the United States Department of Agriculture, at Washington, D. C. Just ask for Farmers Bulletin No.1-5-3-3-F, on Rat Control."

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WITH UNCLE SAM'S NATURALISTS. Friday, November 8, 1929.

NOT FOR PUBLICATION

Speaking Time: 10 minutes.

ANNOUNCEMENT: Every two weeks at this time our Wilds Man tells us about his visits with Uncle Sam's Naturalists. Today he will tell us what Mr. E. N. Munns, in charge of the Forest Experiment Stations of the U. S. Forest Service told him about forests and water.

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You may have heard of the man who couldn't see the forest for the trees. There seem to be a lot of folks like that. They seem to think a forest is simply a group of trees occupying a piece of land. They seem to think the only value of the forest is for the lumber it will produce or maybe because it is pretty to look at.

But if you could talk with Mr. E. N. Munns, in charge of the Forest Experiment Stations of the United States Forest Service, you would soon realize a forest is more than that. There are the trees. There too is the undergrowth and the animals and birds and fish that live in the forest. Then there are the leaves, and little twigs, and all the little animals and insects which live on the forest floor. They are all part of the forest, as Mr. Munns sees it. Each part is dependent upon other parts and all those parts form a living unit.

However, we are not going into all those complex relationships. Let's stick close to the floor--- the forest floor. As we stroll along and kick through the leaves and litter, let Mr. Munns point out to us how that forest litter affects the lives of the little animals in the forest— and the lives of a lot of those of us not near the forest.

But most of us have noticed at one time or another, that forest litter is often moist. Fact is, that is one of the best things forest litter does; it holds water.

That is important to the earthworms. It keeps the soil moist, so the earthworms can live and work. They keep the soil porous. That in turn, lets more water sink into the ground to be used as needed, instead of running off where it will do more damage than good.

Of course, that forest litter is important to the small forms of wild life such as snakes, and mice and the like which live and move and

have their being on the forest floor. And whatever we may think of such animals personally, we all recognize with Mr. Munns that they all play a part in the great balance of Nature.

The forest litter also acts as a filter for the water that percolates through it. That is why forest streams are normally so clear. And you fishermen may know what that means. Many of our food and game fish have to have clear water for their best development. The fry won't thrive or the eggs don't hatch when the water is muddy, as it often gets when the forest litter is destroyed by overgrazing or by forest fires.

And even a few degrees rise in the temperature of water is often enough to kill fry and eggs of fish such as the pickerel and others. The density of the forest and the gradual feeding of moisture into the soil helps keep the water cool. But where there is no cover, the water is warmer. Mr. Munns holds that the increase in water temperature is responsible for the disappearance of several kinds of fish from lakes fed by streams formerly protected by forests.

But our Friday menu is merely one of the minor things affected by changes in the water-holding capacity of the forests. Forest litter probably plays its most important role in helping control floods and preventing erosion.

Of course, it has long been recognized that forest litter slows down the run-off and prevents soil washing. But when the scientists commenced figuring they could not explain why there should be such a big difference between the amount of run-off from bare slopes and covered slopes. Experiments showed another secret of the water absorbing power of soils covered with litter.

It was found that muddy water seals up the soil pores over which it passes. Water filtered through the leaves and the like, which form the forest litter, is able to sink into the soil much more readily. It is kept clean and does not clog.

In fact results of these experiments, made in California, indicate that the litter is the most important part of the forest in determining how much water runs off and how much seeps in.

That shows how fires may cause floods. Fires eating along the forest floor destroy the litter and with it much of the water-holding, flood-reducing capacity of the forest. Studies at the Southern Forest Experiment Station, for instance, showed that in burned forests long leaf pine litter had an average depth of only one inch, whereas in the unburned forest the litter was two inches deep. But the effect on the water-holding capacity of the forest was much more than that. Two inches of forest litter holds eight times as much water as one inch holds. Similar results have been found with other kinds of forests.

A series of destructive fires in the forest of an upland watershed may and often does cause a big increase in the run-off, later. That often increases the flood water, raises the flood crest, puts the flood over the top of the bank in the distant valley and causes a wash-out or puts farms and homes under water.

Under ordinary conditions forest soils absorb from twenty to fifty per cent of light or moderate rains. Even in a steady rain, the leaf mulch keeps feeding the water underground. Of course, in long, hard rains so much water may fall, that the forest litter can't absorb any more! But even so, it has already reduced the run-off and keeps on holding back the surface water on its way to the stream bed.

Fires, however, are not the only thing which cause damage by destroying forest litter. Foresters at the Central States Forest Experiment Station found that the litter was twice as deep on ungrazed parts of a beech forest as on parts that had been pastured. The more grazing of stock in the forest the less the litter was worth in checking flood waters. Over-grazing on forest slopes often bares the soil. The bare soil sheds more water than the litter-covered soil. With the litter no longer there to soak up the water, the rain beats down, washing away soil particles. The muddy water seals the surface pores, and increases the run-off and so the wearing, cutting power of the water. That results in gully-washing and other forms of erosion which rob the soil of food.

So you see the litter on the forest floor plays an important part outside the forest as well as in. Much of the protecting, flood-controlling litter is leaves. That puts a new face on the Fall. From that viewpoint, fall days are no longer the "Saddest of the Year."

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ANNOUNCEMENT: Every other Friday Station __________ presents these results of visits with Uncle Sam's Naturalists, in the United States Department of Agriculture. Remember the day and hour when our Wilds Man will be back.

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UNITED STATES DEPARTMENT OF AGRICULTURE Radio Service

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WITH UNCLE SAM'S NATURALISTS Friday, November 22, 1929

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ANNOUNCEMENT: Every two weeks at this time our Wilds Man tells us about his visits with Uncle Sam's Naturalists and what they say about the wild life in the Big Outdoors. We were puzzling only the other day about why it is some years there is plenty of game and other seasons it is hard to find. Today the Wilds Man is going to give us one of the reasons

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The closer you get to Nature, the more you realize how close you are to it already.

Let's take this question of why there is more game at one season than at another, for example. Dr. W. B. Bell, in charge of the Division of Biological Investigations of the United States Biological Survey, tells me that they are now on the trail of some of the reasons for the ups-and-downs in wild life.

Among the agencies investigating those matters are the Bureau of Biological Survey, the Bureau of Entomology, and the Bureau of Animal Industry of the Department of Agriculture; United States Public Health Service; and the University of Minnesota. The Biological Survey has chiefly to do with wild animals and birds. The Bureau of Entomology is organized to study insects. The Bureau of Animal Industry is concerned mainly with our tame or domesticated animals. The United States Public Health Service is primarily looking after human health. And the University of Minnesota, though its Medical School, is making important studies of the diseases of game birds and fur animals. In other words, from the clues already obtained, it is evident that this question of up-and-downs in game may affect all of us. What we call wild life and tame life and civilized life are all tied up together. We are part and parcel of the same life.

When you see a vigorous old rabbit tearing through space by leaps and bounds, you would hardly think that any rabbits have any ailments to speak of. But wild rabbits, and quail, and foxes, and wolves, and mountain lions, and bears, and all other forms of wild life are subject to outbreaks of disease, even as you and I. And what is worse, many of us are subject to the same diseases as the animals.

Tularemia, for instance was first discovered in ground squirrels in California. Tuloremia was then found in wild rabbits in Utah. Later it was discovered that the sometimes fatal disease of man locally known as

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ANNOUNCER: Every two weeks at this time our Wildlife Man tells us about his visits with Uncle Sam's Naturalists and what they say about the wild life in the Big Outdoors. We were wondering only the other day about why it is some years there is plenty of [illegible] and other years it is hard to find. Today the Wildlife Man is going to give us one of the answers.

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The [illegible] you get to [illegible], the more [illegible] how [illegible] [illegible] it [illegible].

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[illegible] you [illegible] old [illegible] [illegible] [illegible] up [illegible] [illegible], you [illegible] [illegible] that [illegible] have [illegible] estimate [illegible] [illegible]. [illegible] [illegible], and [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] to [illegible] [illegible] [illegible] [illegible] [illegible], [illegible] are [illegible] [illegible] the [illegible].

[illegible], for instance [illegible] [illegible] in ground squirrels in [illegible]. [illegible] [illegible] with rabbits in Utah. [illegible] [illegible] [illegible] from local [illegible] [illegible].

deer-fly fever, was the same plague that kills great numbers of cottontail, snowshoe, and jack rabbits in all parts of this country and that we now call tularemia.

Dr. Bell noted that flocks of quail were reported to be wiped out by some mysterious cause about the same time that rabbit plagues were prevalent. Investigation was made, and the same sort of ticks that carry tularemia from rabbit to rabbit were found on quail. It seems likely therefore that numbers of quail are swept away by the tularemia carried by these ticks.

But that is not all. Ruffed grouse were found to be susceptible to this same killing malady. This disease also can be transmitted to a human being who skins a diseased wild rabbit. No case of tularemia has ever been diagnosed in domestic rabbitries, although it has been produced in rabbits in laboratory experiments. Animals in commercial rabbitries are seldom exposed to the insect carriers of tularemia.

Nor does this story of the inter-relationship of one animal plague end there. Foxes and wolves prey upon rabbits, and are also subject to diseases that are now thought to be responsible for the p or trapping in some seasons. Our fur trade may, in that way, be affected by this same trouble. Uncle Sam's scientists are looking into that possibility, also.

So you see that's just part of the case against one animal plague. Warble flies similar to those that do serious damage to reindeer hides in Alaska have recently been found to be causing trouble among deer in Pennsylvania.

Insects not only do direct damage, but often act as carriers of disease germs from one kind of animal to another. That is the reason the entomological detectives have had to be called in to help trace the many puzzling causes of increases and decreases in wild life.

When you realize that most insects change form one or more times during their lives and may infest one animal at one stage of their development and another animal at another stage, you can see what a job it is sometimes to trail these troubles through all their ramifications.

Sometimes, Dr. Bell tells me, diseases may be carried from domestic animals on a farm to the untamed animals of the wild. Or again the wild animals may serve as a reservoir of infection for our domestic animals, or, as in the case of tularemia, for human beings. The danger has increased as livestock farming has increased, and as cities have grown.

Hunters should take care while in the open to avoid as far as they can the bites of deer flies and ticks, and other known carriers of tularemia. Use rubber gloves when handling or dressing rabbits or when skinning other animals that may be infected with the disease, so as to avoid contact with the blood or entrails. Do the same in handling fresh skins. One attack of tularemia is believed to make a person immune from later attacks. That may be very well, if you recover from the first attack. Out of 500 human cases reported in the United States, 20 have ended fatally. No effective medical treatment for tularemia is yet known.

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[illegible] water-rolatal [illegible] rabbit, [illegible] [illegible] [illegible] that [illegible] [illegible] possibility [illegible].

Do you see that's part of the case against one [illegible]. [illegible] damage to [illegible] [illegible]

Insects not only do direct damage, but often act as carriers of disease [illegible]. That is the reason [illegible] help [illegible] making [illegible] [illegible].

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This is just by way of warning to be careful! In many parts of this country there is now a great deal of interest in setting wild rabbits free to restock hunting areas. In the past, many such animals have been obtained from States where tularemia is now known to have been prevalent.

Again that is a warning. When such importations appear desirable, be very careful to keep an effective quarentine to prevent starting an outbreak of tularemia. According to what we know now, wild rabbits should be placed in quarantine for ten days before they are turned loose in the wild. Infected animals will show symptoms of the disease and will hardly live more than five or six days.

The Biological Survey issues a statement summarizing the available information on the subject of tularemia. Ask for leaflet Bi-903 on Tularemia, an Animal-Borne Disease.

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ANNOUNCEMENT: You can get that leaflet Bi-903 by writing direct to the United States Department of Agriculture, Bureau of Biological Survey. Ask for "Tularemia, An Animal-Borne Disease" The number is Bi-903.

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UNITED STATES DEPARTMENT OF AGRICULTURE
Radio Service
OFFICE OF INFORMATION

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WITH UNCLE SAM'S NATURALISTS Friday, December 6, 1929

NOT FOR PUBLICATION

SPEAKING TIME: 10-1/2 minutes.

ANNOUNCEMENT: This is the day and hour when our Wilds Man takes us to Washington for our regular Friday visit with Uncle Sam's Naturalists. He has been talking with men in the Forest Service, United States Department of Agriculture, trying to get the facts on the future of the United States' wood supply. The facts make an interesting sotry. And now here's the Wilds Man--ready to tell that story in a talk which is broadcast by Station_____through a cooperative arrangement with the Department of Agriculture.

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I can remember the time when one of the great concerns of the farmer was to get the timber OFF his land. That, in the country where I lived, was a time of clearing the land. And clearing the land was no small job. But a big change has come in the timber supplies of this country and now a whole lot of farmers would like to see more timber ON their land.

The same change has come about in the hills and in the forests. America's great stands of virgin timber--once thought INEXHAUSTIBLE---have been used up so fast that already the last extensive stands are being tapped. The United States is a great wood-using nation. Our newspapers alone eat up thousands of acres of timber every year. That morning or evening paper you buy for a few cents is printed on a wood-pulp paper and you have to have trees if you're going to have wood pulp. That's only one example of the country's mamoth appetite for wood and that wood has to be supplied somehow--unless we can find a good substitute. The trouble is, virgin timber is practically irreplaceable because of the length of time necessary to grow material of the highest quality. You can't grow a tree over the week-end, you know.

I was talking this over with some of the men in the Forest Service of the Department of Agriculture the other day and they gave me some figures. The forest land of the United States, they said, amounts to about 730 thousand square miles altogether. About 150 thousand square miles is managed for permanent timber production under public ownership, Federal, State, and local. The other 580 thousand square miles-- an area larger than France, Belgium, the Netherlands, Denmark, Germany, and the British Isles, by the way-- is privately owned. This privately owned forest land supports industries giving employment to more than a million people and turning out each year wood products valued at 2 billion dollars. This is enough to supply domestic needs and furnish wood products worth about 200 million dollars to foreign countries.

That sounds very impressive-- that sounds like very good business. That sounds like America's wood pile is a very big proposition--- and it is. But the trouble is, only a small portion of this woods land is now being handled so as to produce timber continuously. The greater part of the land is gradually drifting

into idleness, producing so little that it is a burden to its owners and to the communities within whose territory it lies. Some 125 thousand square miles have already stopped being productive and a much larger area is only partly productive. The UNPRODUCTIVE land, the Federal foresters say, is being abandoned not because of any serious difficulty in keeping it PRODUCTIVE, nor because no way to keep it productive is known, but because its owners doubt whether timber-growing will pay. Up until very recent years, as the virgin timber in one region was cut, there was always another virgin supply just over the hill or in the nearby country. But that's not so any more.

Now let's take a look at another side of the question. Government experts say that more wood is used in the United States than in any other country. WE CONSUME AS MUCH TIMBER FROM TREES LARGE ENOUGH TO SAW OUT LUMBER AS ALL THE OTHER COUNTRIES COMBINED--- or about 13 BILLION cubic feet in all. The United States leads the world in the manufacture of many products made wholly or partly of wood. With only 6 per cent of the world's population, this country has 35 per cent of the world's railway mileage and for the transportation industries alone--including automobiles and railroads--we use nearly as much saw timber per capita as is required for all purposes in Great Britain, Germany, or France. We use immense quantities of wood every year for making shipping and storing crates, boxes, and barrels. Great forests are used up every year to make pulp for our paper supply. The United States is known all over the world as the land of wooden houses. We are cutting from our forests about 200 cubic feet of wood every year for each man, woman, and child in the United States.

Of course, the United States isn't alone among the nations of the world when it comes to using wood. Some folks think that wood is more or less out of date and that it's rapidly being replaced by cheaper materials or better materials. That doesn't seem to be so. Newsprint and other woodpulp products--automobiles--phonographs--radio cabinets--and many other articles requiring large quantities of wood, have come into extensive use within a generation. As a matter of fact, as populations grow and as living standards rise and human wants become more complex, timber consumption increases in spite of the tendency to use wood more economically. It seems that no sooner do we find substitutes for wood than new uses for wood arise. Many foreign countries have learned the truth of _that_.

China is the classic example of a nation that has suffered from an exhausted wood-pile. Some 2,500 years ago, China was abundantly supplied with forests. The population increased rapidly and the people cut the timber as it was needed, wastefully and without thought for the future. At first, the Government seldom or never interfered. Land clearings--- wasteful cutting-- repeated forest fires, continuing throughout many centuries, gradually pushed the forests back until they are confined to the least accessible parts of the mountains today. To get timber down to the main consuming centers of the country takes from 6 months to 3 years. This has put timber into the luxury class in China and the general public can't afford it. In many districts, timber large enough to make boards is so scarce that practically none is used save for the manufacture of coffins.

Let's carry the story a step further. Since wood for building or for fuel can't be gotten, you'd naturally expect the Chinest to turn to substitutes, such as coal, brick, cement, and steel. The country has these and other mineral resources in plenty. But without timber, it's impossible to use the substitutes. The few coal mines that are developed depend largely on imported timber for props, lagging, and other needed construction material. The railroads that carry the coal run on wooden ties brought in from Manchuria, Japan, or North America. Small native iron foundries use charcoal brought for many long miles on boats

produced [illegible] is a waste [illegible] Some 180 thousand square miles are [illegible] in [illegible] and a much larger area [illegible] productive. [illegible] Forest [illegible] is being [illegible] producing, [illegible] pulp [illegible] its [illegible] whether timber [illegible] will [illegible] in [illegible] one [illegible] there [illegible] pulp [illegible] or in the [illegible] country. [illegible] more.

Now let's take a look at another side of the question. [illegible] expert [illegible] The United States [illegible] TIMBER [illegible] or [illegible] sheet in all. The United States [illegible] the [illegible] products made [illegible] wood. [illegible] per cent of the world's population [illegible] per cent of the world's [illegible] industry [illegible] automobiles [illegible] timber [illegible] France. [illegible] of wood [illegible] storage [illegible] and [illegible] forests are used up [illegible] to make pulp for our [illegible] supply. The United States [illegible] all over the world as the land of wooden [illegible] We [illegible] of wood [illegible] child in the United States.

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Let's [illegible] stock [illegible] further. [illegible] wood [illegible] building or for fuel [illegible] you'd naturally expect the [illegible] quantities, and [illegible] cement, and steel. The country has [illegible] other [illegible] But [illegible] timber, it's [illegible] to use the [illegible] that are dependent [illegible] imported timber for [illegible] and other needed [illegible] materials. [illegible] of wooden [illegible] Germany, [illegible] or North [illegible] have been forced [illegible] for [illegible] miles [illegible]

and on men's backs. Domestic iron and coal, therefore, are produced only in small quantities and are so costly that they can hardly compete in the seaport cities with the iron and steel brought from North America and from Europe.

Well, there's the lesson--- there's the situation in a country that wasted its wood supplies. What's the moral, so far as the United States are concerned?

First of all, the Government forest men say that we are going to continue to need wood. Of course, we can use other materials for many purposes for which wood is now used or was once used. We have been doing THAT for a long time. Wood for fuel, for example, has been largely replaced by coal, gas, or oil, except in rural districts a long way from such a fuel supply. Wooden houses are being torn down and replaced by brick or concrete houses. Office furniture is being made of steel. Steel wire has almost replaced wooden rails for fences and in some cases iron and concrete posts are supporting fences that once were made almost entirely of wood. Wooden ships, bridges, and railroad cars are rapidly becoming as out-of-date as ear-muffs or snuff boxes.

But with all this, we are still going to need plenty of wood in this country. Even if our PER CAPITA consumption should fall as low as present European standards, the increase in population which is likely to take place in the next 50 years will keep our timber requirements at a level little, if any, below our present timber needs. Furthermore, it often takes wood to make the very things which are designed to take the place of wood. The coal mines of the United States alone consume a billion board feet of lumber a year. And of course we are constantly increasing and broadening the uses for wood. As our cities grow, more and more wood will be needed to make the containers in which their food is shipped in from the producing sections.

All this brings us down to a rather obvious moral: GROW MORE WOOD OR ELSE USE LESS. Americans must depend largely on their own resources, so far as wood is concerned. But the drain on our forests may be reduced in 2 ways: First--- we can eliminate a large part of the waste that now takes place. We can prevent some of the fire, storm, disease, and insect-pest losses to our standing timber supply. More careful use of the trees that are cut will allow us to cut 7 or 8 billion board feet less wood without cutting down the present rate of consumption. We are using much more of the whole tree now than we used to and we can use still more of it. Second-- we can conserve our forests and timber supply by using less wood. Americans have burned the forest candle at both ends for many generations, mainly because wood has been cheap and plentiful. As wood becomes scarce and dear, we may have to do what China has done. But before we reach that stage, it's best to begin a certain conservative discipline. We will always need our forests. We should, therefore, conserve and maintain them.

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ANNOUNCEMENT: That was the Wilds Man you just heard, taking you to Washington for your regular weekly visit with Uncle Sam's Naturalists. His talk is broadcast by Station____ every Friday, in cooperation with the U. S. Department of Agriculture. Write to the Forest Service of the Department, Washington, D. C., if you want still more facts and figures on the future of America's wood-pile.

and of man's bacon. D[illegible] coal, [illegible] produced only in small quantities [illegible] they can hardly compete in [illegible] with [illegible] from North America and from Europe.

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[illegible] of all, the Gove[illegible] that we are [illegible] wood. Of course, we [illegible] other materials for many purposes for which wood is now [illegible] was once used. We have been doing [illegible] Take, for example, [illegible] coal, gas, and oil, [illegible] which a long [illegible] wood supply. Wooden [illegible] replaced [illegible] houses. Office furniture is [illegible] of steel. Steel [illegible] replaced [illegible] rails for [illegible] that once were [illegible] of wood. [illegible], bridges, and railroad [illegible] made of [illegible].

[illegible] still many [illegible] wood [illegible] all consumption [illegible] as low as present European standards, [illegible] is likely to take place in [illegible] level little, if any, below [illegible] present. Furthermore, it often takes wood to make [illegible] designed to take [illegible] of wood. [illegible] coal [illegible] of the United States [illegible] billion [illegible] a year. And of course [illegible] uses for wood. As our [illegible] and [illegible] will be needed to make the containers in which [illegible] is shipped [illegible].

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UNITED STATES DEPARTMENT OF AGRICULTURE Radio Service OFFICE OF INFORMATION

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WITH UNCLE SAM'S NATURALISTS. Friday, December 20, 1929.

NOT FOR PUBLICATION

ANNOUNCEMENT: Every two weeks at this time our Wilds Man tells us about his visits with Uncle Sam's Naturalists. Today he is scheduled to tell us what Mr. Frank G. Ashbrook, in charge of the Division of Fur Resources of the United States Biological Survey, has to say about fur farming.--------Here is the Wilds Man now.

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When we think of fur animals, we ordinarily think of animals in the wild. The trails of the trappers have penetrated remote regions where highways never ran. Out-of-the-way places in nearly all parts of the globe yield fur animals to the fur trade. Naturally, the colder countries produce the finest furs. Alaska and the Hudson Bay region of Canada are famous for furs, but the wilds of every one of our northern States yield fur animals.

In fact, strange as it may seem, one of the greatest fur-producing regions of the world is our own Mississippi River Valley. And the American farm boy is even now probably the world's greatest trapper. Ever since the days of the Indians and since the first of those adventurous French wood rangers started fur trading in the middle of what is now our country, trapping and hunting of fur animals have been going on.

There are still some foxes, and martens, and minks, and fishers, and beavers, but these finer fur animals are scarce. There are still, however, considerable numbers of skunks, and opossums, and raccoons, and muskrats. The muskrat, living in swamps and raising big families and raising them often, is one of the world's greatest fur producers.

However, the pioneer who wore a coonskin cap has been succeeded by his collegiate great grandson who wears a coonskin coat, and a flock of granddaughters and great granddaughters who are appareled in the prime pelts from many other fur bearers. As Mr. Frank G. Ashbrook, chief of the Division of Fur Resources of the United States Biological Survey, puts it: "The fur wearers are increasing faster than the bearers."

The fur bearers not only are being trapped out to supply the trade, and crowded out by the encroachment of cities and farms on the wilds, but in many cases are being hunted down as so-called "vermin" in a mistaken zeal for the protection of other animals and game birds.

In the meantime, government scientists and fur farmers are demonstrating that fur animals can be raised in captivity and that the fur produced is of better quality than the fur from animals captured in the wild. There are now over 5,000 fur farms in this country and Alaska, and between twenty and twenty-five million dollars is invested in the business. And these figures don't include the vast areas of privately owned muskrat marshes in many sections of this country which are operated as fur farms.

Last year, Mr. Ashbrook says, there were about 80,000 silver-fox skins produced on fox farms in the United States, and Canada. Fifteen years ago there were not over a hundred silver fox pelts offered for sale in a year's time. The enormous prices paid for silver-fox skins led trappers to dig fox pups out of their dens and try to raise them in captivity. Success in these efforts started a boom of fur farming. There was at first a lot of "wild-cat" fur farming by foxy promoters, and there were disappointments due to mistakes in the new business of folks who didn't know foxes.

For instance, at first, foxes were treated as scavengers. They were were forced to eat refuse and to live in filth. Naturally, such conditions produced poor foxes with poor fur.

Of course, fur bearers are not domesticated stock in the ordinary sense of the word. They are still wild although raised in captivity. But fur farming is like any other livestock raising in that the fur farmer should know his stock and understand animal feeding, and breeding, and management. As with other kinds of livestock, sanitation is essential. Fur animals need clean food and clean surroundings to prevent diseases and keep them in good condition. They must be kept in good condition to produce good fur if they are to pay for their keep, and give the farmer a fair profit.

The United States Biological Survey maintains a Fur-Animal Experiment Station at Saratoga Springs, New York, and a Rabbit Experiment Station at Fontana, California. And, in cooperation with the Medical School of the University of Minnesota, it is doing research work on fur-animal diseases.

The idea is to find out things of value about all kinds of fur animals now being raised on fur farms in this country. At the Experiment Stations investigations are made of the best management practices regarding feeding, breeding, and housing and the control of diseases and parasites to which fur bearers are subject.

Getting back to silver foxes, Mr. Ashbrook estimates that ninety-nine per cent of all the silver-fox fur produced in this country is from animals raised on fur farms. This means that so far as silver fox fur is concerned, fur farming is practically the whole thing.

Silver fox farming is, however, the longest established of our fur-farming businesses. The total of furs produced on fur farms is but a drop in the bucket compared to the total fur production from the wild.

But following on the heels of the silver fox farmers, others have gone in for mink and muskrat raising. Minks are not hard to raise in

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[illegible] Mr. Ashbrook says, there were some [illegible] in the [illegible] limited [illegible] and [illegible] first [illegible] not over [illegible] hundred silver [illegible]. The enormous prices paid [illegible] fox grew out of their case [illegible] these efforts started a boom of fur farming [illegible] "wild-cat" fur farming by many [illegible] to mistakes in the new business [illegible].

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captivity when fed and handled properly, but it is a problem to raise them on big enough a scale to make the business pay. With muskrats, however, the marsh itself produces the food, and the muskrat care for themselves. This system of fur ranching or trapping on privately controlled wild regions has proved profitable in several sections.

Skunks are not held in bad odor-- as fur producers, that is-- but at present market prices more money must be spent for feed and labor than can be realized from sale of the pelts. However, any one considering fur farming with <u>any</u> of the fur bearers may well avail himself of the information to be had free of charge from the experts of the Bureau of Biological Survey of the United States Department of Agriculture.

The Department also has a publication giving "Recommendations to Beginners in Fur Farming." Ask for Leaflet No. 27-L.

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ANNOUNCEMENT: That leaflet is Leaflet No. 27-L giving"Recommendations to Beginners in Fur Farming. You can get it free of charge either by writing to this Station----- or by writing direct to the United States Department of Agriculture, at Washington, D. C. Station_________ cooperates with the Department of Agriculture in presenting the talk to which you have just listened.

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